

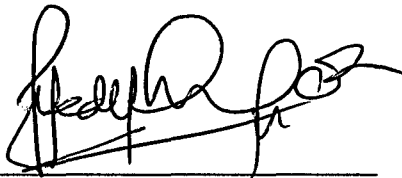
**THE INVESTIGATION OF FIN PLATE OF MiG-29 AIRCRAFT MADE OF
ALUMINIUM ALLOY D19 USING CONVENTIONAL ULTRASONIC
TESTING
(A-SCAN SYSTEM)**

SITI NUR HASANAH BINTI HAMZAH

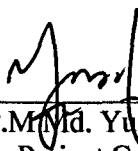
**Final Year Project Report Submitted in
Partial Fulfillment of the Requirement for the
Degree of Bachelor of Science (Hons.) Physics
In the Faculty of Applied Sciences
Universiti Teknologi MARA**

JULY 2013

This Final Year Project entitled “ **The Investigation of Fin Plate of MiG-29 Aircraft Made of Aluminium Alloy D19 Using Conventional Ultrasonic Testing (A-Scan System)**” was submitted by ‘Siti Nur Hasanah bt Hamzah, in partial fulfilment of the requirements for the Degree of Bachelor Science (Hons.) Physics, in the Faculty of Applied Sciences, and was approved by



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ACKNOWLEDGEMENT

In the name of ALLAH The Most Gracious and Most Merciful, I am very grateful to Him for allowing me to complete my final year project report. I would like to take this opportunity to express my thanks and gratitude to all people below for their contributions to my final project report, which made it better in many ways.

I have been very fortunate to work under the supervision of Dr. SYED YUSAINEE BIN SYED YAHYA, whose thoughtful advice and captivating spirit contribute to the quality of this final project report. I greatly appreciate the time he spent on helping me and giving me sound advice, and I extend my most sincere thanks to him. His contribution in the completion of my project means a lot to me and I am indebted to him.

I am also grateful to all my family and my classmates who have been supporting me in every possible way in finalizing this report. Last but not least, Million thanks to those who involve directly and indirectly for helping me to achieve the success of this project.

SITI NUR HASANAH BINTI HAMZAH

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ABSTRACT

The attachment of the fin plate of MiG-29 aircraft was inspected by using conventional ultrasonic testing method. . Ultrasonic non-destructive testing, also known as ultrasonic NDT or simply UT, is a method of characterizing the thickness or internal structure of a test piece through the use of high frequency sound waves. The frequencies, or pitch, used for ultrasonic testing are many times higher than the limit of human hearing, most commonly in the range from 500 KHz to 20 MHz. Ultrasonic testing was significant for quality assessment and evaluation of the critical part component in aircraft such as the fins without altering or damaging the material under the test. Pulse echo technique is the most common technique used in ultrasonic testing which make used the phenomenon that sound waves travel in straight line and are reflected by an obstacles placed in their way. The effects of different probes frequency (5MHz, 10 MHz and 20MHz) were observed by analyzing the signal produced from the ultrasonic test set being used. Higher frequency probes have shorter wavelength and this will increase the sensitivity to locate the defect in the test material. Therefore, for a thin material as the fin plate it was recommended to use a higher frequency since it promotes a shorter wavelength into the test material being inspected. Since the type of material and couplant used have severe affects on the testing results, therefore the material and the type of couplant used were kept constant throughout the inspection. Throughout the testing, fin plate made of aluminium alloy D19 and couplant (petroleum grease) were used to ensure the different variables affecting the result of the testing.